REFERENCES 73

[42] B. Baudry and M. Monperrus, "The multiple facets of software diversity: Recent developments in year 2000 and beyond," ACM Comput. Surv., vol. 48, sep 2015.

- [43] K. Pohl, G. Böckle, and F. Van Der Linden, Software product line engineering: foundations, principles, and techniques, vol. 1. Springer, 2005.
- [44] T. Y. Chen, F.-C. Kuo, R. G. Merkel, and T. H. Tse, "Adaptive random testing: The art of test case diversity," *J. Syst. Softw.*, vol. 83, pp. 60–66, 2010.
- [45] S. Sidiroglou-Douskos, S. Misailovic, H. Hoffmann, and M. Rinard, "Managing performance vs. accuracy trade-offs with loop perforation," in Proceedings of the 19th ACM SIGSOFT Symposium and the 13th European Conference on Foundations of Software Engineering, ESEC/FSE '11, (New York, NY, USA), p. 124–134, Association for Computing Machinery, 2011.
- [46] Avizienis and Kelly, "Fault tolerance by design diversity: Concepts and experiments," *Computer*, vol. 17, no. 8, pp. 67–80, 1984.
- [47] F. B. Cohen, "Operating system protection through program evolution.," Computers & Security, vol. 12, no. 6, pp. 565–584, 1993.
- [48] T. Jackson, On the Design, Implications, and Effects of Implementing Software Diversity for Security. PhD thesis, University of California, Irvine, 2012.
- [49] J. V. Cleemput, B. Coppens, and B. De Sutter, "Compiler mitigations for time attacks on modern x86 processors," *ACM Trans. Archit. Code Optim.*, vol. 8, jan 2012.
- [50] A. Homescu, S. Neisius, P. Larsen, S. Brunthaler, and M. Franz, "Profile-guided automated software diversity," in *Proceedings of the 2013 IEEE/ACM International Symposium on Code Generation and Optimization (CGO)*, pp. 1–11, IEEE, 2013.
- [51] M. Jacob, M. H. Jakubowski, P. Naldurg, C. W. N. Saw, and R. Venkatesan, "The superdiversifier: Peephole individualization for software protection," in International Workshop on Security, pp. 100–120, Springer, 2008.
- [52] R. M. Tsoupidi, R. C. Lozano, and B. Baudry, "Constraint-based software diversification for efficient mitigation of code-reuse attacks," *ArXiv*, vol. abs/2007.08955, 2020.
- [53] S. Bhatkar, D. C. DuVarney, and R. Sekar, "Address obfuscation: an efficient approach to combat a board range of memory error exploits," in *Proceedings* of the USENIX Security Symposium, 2003.

74 REFERENCES

[54] S. Bhatkar, R. Sekar, and D. C. DuVarney, "Efficient techniques for comprehensive protection from memory error exploits," in *Proceedings of the* USENIX Security Symposium, pp. 271–286, 2005.

- [55] K. Pettis and R. C. Hansen, "Profile guided code positioning," in Proceedings of the ACM SIGPLAN 1990 Conference on Programming Language Design and Implementation, PLDI '90, (New York, NY, USA), p. 16–27, Association for Computing Machinery, 1990.
- [56] S. Crane, A. Homescu, S. Brunthaler, P. Larsen, and M. Franz, "Thwarting cache side-channel attacks through dynamic software diversity.," in NDSS, pp. 8–11, 2015.
- [57] A. Romano, D. Lehmann, M. Pradel, and W. Wang, "Wobfuscator: Obfuscating javascript malware via opportunistic translation to webassembly," in 2022 2022 IEEE Symposium on Security and Privacy (SP) (SP), (Los Alamitos, CA, USA), pp. 1101–1116, IEEE Computer Society, may 2022.
- [58] M. T. Aga and T. Austin, "Smokestack: thwarting dop attacks with runtime stack layout randomization," in *Proc. of CGO*, pp. 26–36, 2019.
- [59] S. Lee, H. Kang, J. Jang, and B. B. Kang, "Savior: Thwarting stack-based memory safety violations by randomizing stack layout," *IEEE Transactions* on Dependable and Secure Computing, 2021.
- [60] Y. Younan, D. Pozza, F. Piessens, and W. Joosen, "Extended protection against stack smashing attacks without performance loss," in 2006 22nd Annual Computer Security Applications Conference (ACSAC'06), pp. 429–438, 2006.
- [61] Y. Xu, Y. Solihin, and X. Shen, "Merr: Improving security of persistent memory objects via efficient memory exposure reduction and randomization," in *Proc. of ASPLOS*, pp. 987–1000, 2020.
- [62] G. S. Kc, A. D. Keromytis, and V. Prevelakis, "Countering code-injection attacks with instruction-set randomization," in *Proc. of CCS*, pp. 272–280, 2003.
- [63] E. G. Barrantes, D. H. Ackley, S. Forrest, T. S. Palmer, D. Stefanovic, and D. D. Zovi, "Randomized instruction set emulation to disrupt binary code injection attacks," in *Proc. CCS*, pp. 281–289, 2003.
- [64] M. Chew and D. Song, "Mitigating buffer overflows by operating system randomization," Tech. Rep. CS-02-197, Carnegie Mellon University, 2002.